

ABSTRACT

VOLTAGE BOOSTER CONVERTER

Voltage booster converter comprising:

- a pair of input terminals A and B for connecting a DC input voltage V_{in} between these two terminals;

- a pair P_0 of switches SB, SH in series connected by the switch SB to the input terminal B, the input terminal A being connected across an input inductor L_{in} to the connection point between the two switches SB and SH in series, each switch SB, SH comprising a control input so as to be placed simultaneously, one in an on state the other in an isolated state;

- a pair of output terminals C and D, for powering, by an output voltage V_{out} , a load R_{out} , the output terminal D being connected to the input terminal B;

- K other additional pairs $P_1, P_2, \dots, P_{i-1}, P_K$ of switches in series between the output terminal C and the free side of the switch SH with $i = 1, 2, \dots, K-1, K$, the two switches of one and the same additional pair P_i being connected across an energy recovery inductor L_{r1} ;

- K input groups, $G_{in1}, G_{in2}, \dots, G_{in_i}, \dots, G_{in_{K-1}}, G_{in_K}$, of N_i capacitors C of like value each in series, with $i = 1, 2, \dots, K-1, K$ and $N_i = i$;

- K output groups, $G_{out1}, G_{out2}, \dots, G_{out_i}, \dots, G_{out_{K-1}}, G_{out_K}$, of M_i capacitors C of like value each in series, with $i = 1, 2, \dots, K$ and $M_i = (K+1)-i$.

The switches of these other K additional pairs are controlled simultaneously by the first and second complementary control signals.

Applications: compact voltage booster converters of high efficiency.

Figure: 2